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From The Editor's Desk

The list of cancer sites with major, preventable risk factors grows longer. The foods we eat, scientists agree, are emerging as important sources of environmental risk for cancers of the colon, stomach, uterine corpus, breast and prostate. When the effects of different foods are added to the known effects of tobacco and certain occupational exposures, the list of sites with preventable factors is impressive.

Prevention a Cure for Some Cancers?

In this issue colon cancer deaths are discussed by *SB* staff, with notable regional differences observed that are likely related to environmental effects. And in an editorial, Lawrence Garfinkel, vice president for epidemiology and statistics, and director of cancer prevention, the American Cancer Society, provides *SB* readers with an insider's glimpse of cancer prevention. The message is clearly good news.

The question before the public seems equally clear: will Americans embrace risk reduction in cancer with the same enthusiasm as they did heart disease risk? If so, there is good reason to be optimistic about cancer prevention in the twenty-first century. May it be so.

Living Longer With Love

Americans are living longer, and the beneficiary of this increased longevity is marriage. A rising proportion of those who have remained married to the same spouse are likely to survive to a 50th wedding anniversary. *SB's* lead article might provide a personal estimate for you.

Deaths from suicide are among the least discussed and most feared and frustrating events for involved families and for society. Often, especially in men, these deaths come without any warning. Statistical analysis also poses dilemmas. There are time trends, usually related to adverse economic events, but not much more. This quarter *SB* analyzes suicide deaths in the United States in the recent past, because they are a leading cause of death in the United States. Perhaps you have an insight that could contribute to our greater understanding. If so, we hope you will share it with us.

Unnecessary Surgeries?

Had your gall bladder out recently? If you did, you are one among many. In *SB's* continuing analysis of surgical procedures that often require a second opinion, cholecystectomy surgery is singled out in this issue. How do charges in your state compare to your region, the country?

On that quizzical note, I shall wish you good reading. □

Charles B Arnold

The Statistical Bulletin will publish comment and criticism from readers about its contents. Alternate interpretations of data analyses or different points of view about subjects are particularly welcome. Use address at end of publisher's statement, opposite page.

Increased Chances of a Golden Wedding Anniversary

The chances that a newly married couple will celebrate a golden wedding anniversary have increased significantly since the turn of the century. The likelihood that today's typical bride and groom will both survive the next 50 years is 2¼ times higher than the chances during 1900-02. Moreover, within the past decade, the probability of a golden wedding anniversary for this typical couple increased by 26 percent. However, joint survivcl for 50 years does not necessarily mean that the couple will celebrate this anniversary. Marriages may be dissolved by divorce or annulment, and these methods of dissolution have recently become more frequent.

Based on the United States 1979-81 general population life tables for all men and women, the chances for mutual survival for an additional 50 years for a man aged 25 who marries a woman aged 23 (the median age at first marriage in 1984) are 350 in 1,000 compared with only 108 in 1,000 in 1900-02. At the beginning of the century the median age at first marriage for a groom was 26 and for a bride, 22. The likelihood that both would live another half century was 105 in 1,000. In 1979-81 the probability of joint survival for a couple at these ages was 337 in 1,000, up from 266 in 1,000 a decade earlier.

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Age at Marriage

The Bureau of the Census first started tabulating the median age at first marriage in 1890. It is noteworthy that the median age at first marriage of today's brides is at a record high. In addition, for grooms who took their

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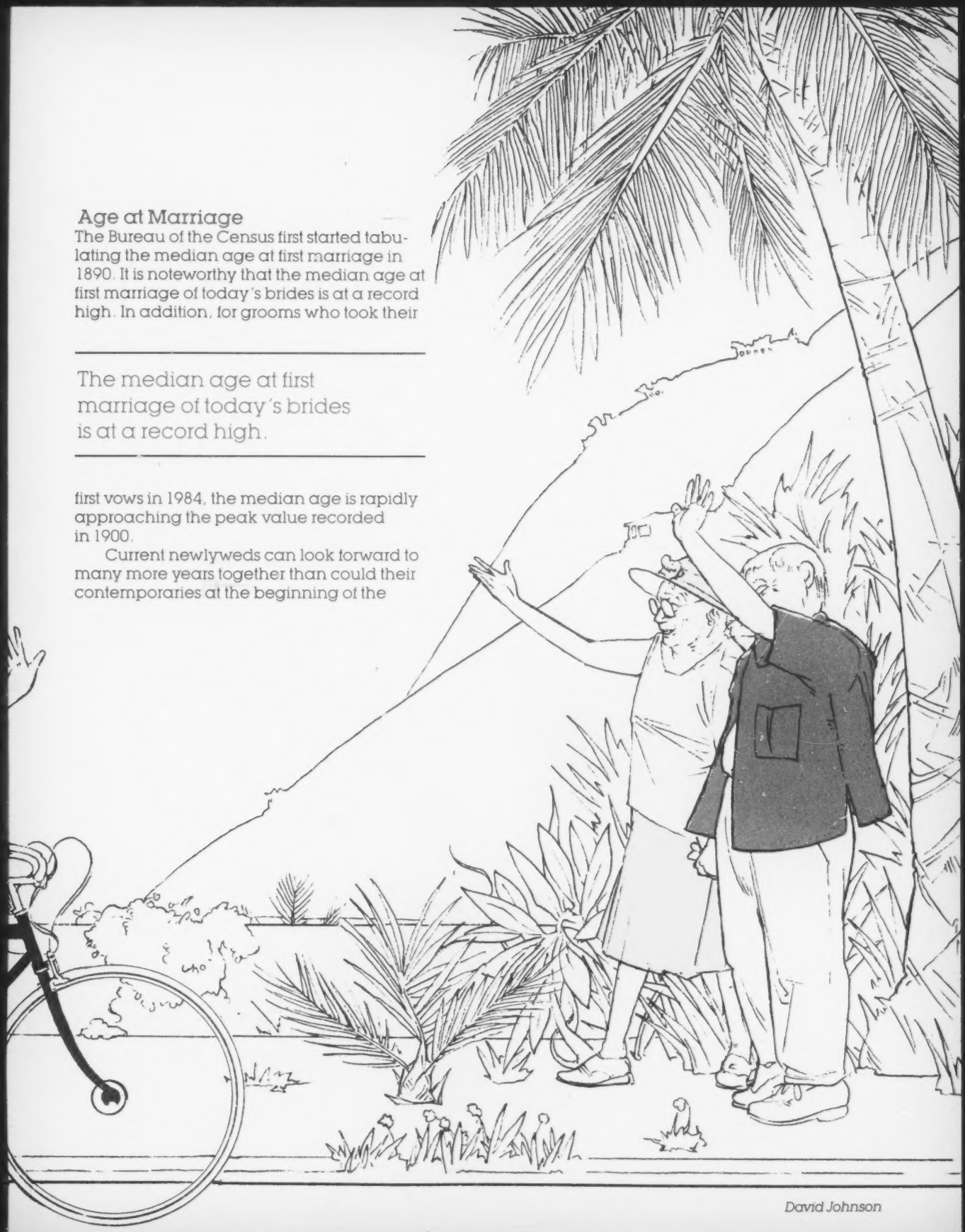
first vows in 1984, the median age is rapidly approaching the peak value recorded in 1900.

Current newlyweds can look forward to many more years together than could their contemporaries at the beginning of the



David Johnson

century. Thus the potential* duration of marriage for a groom of 25 and a bride of the same age is now 42.6 years—a gain of fully 13 years since 1900-02. There is also a considerable increase in the average anticipated years together for newlyweds both 20 years of age. Today this couple can expect 47 years of married life compared with 44.5 years in 1969-71 and 32.6 years in 1900-02.

Because men generally do not marry women the same age, the disparity in a couple's ages has a substantial effect on the length of their married life. For example, based on the 1979-81 tables, if the 25-year-old male in the above scenario would have married a 30-year-old female instead of a 25-year-old female, their likelihood of joint survival would be diminished by two years. The difference in age at marriage on the effect of years together is also reinforced by the case where the groom is aged 35 and the bride aged 30. On the average, they can expect another 35 years of joint survival; however, if the bride was two years older than the groom, the remaining lifetime together would fall to 32.9 years. Older grooms can also expect a long married life. In the event that a groom is 50 years of age at the time of marriage and his bride is the same age or as much as five years younger, about 22 years of married life remain on the average. It is interesting to note that if a man of 65 marries, he can expect to live together with his wife for at least 11 years if she is the same age as he or younger. Table 1 presents the joint expectation of life for couples of selected ages in 1979-81 and 1900-02.

It is of general interest to ascertain the chance of celebrating a golden or silver wedding anniversary. Not unexpectedly, the chances of joint survival for 50 years are most favorable for young couples and decrease rapidly with advance in age at marriage. Currently when a bride and groom are both 20 years of age, the chances of joint survival are 479 per 1,000, fall to 330 per 1,000 when both are 25 and further decline to 186 at age 30. The chances of a golden wedding anniversary in the case where the male is aged 40 or older are less than two in 100. Golden wedding anniversaries are more likely to be celebrated in those instances when the bride is younger than the groom. Thus when the groom is aged 25 and the bride aged 23, the chance of the event taking place is 350 in 1,000. The probability rises to 375 in 1,000, if the bride is aged 20.

Silver Celebrations

The improvement in survival since 1900 also means that a very high proportion of young couples will celebrate a silver wedding anniversary. If the groom is aged 24 or less at the time of marriage and his bride is two years or more younger, 900 in 1,000 can look forward to celebrating the happy event. The probabilities are almost as great for men who marry between ages 25 and 30. For men who marry as late as 40, the chances of a silver wedding anniversary are also very favorable.

It is almost certain that today's newlyweds will survive the next 10 years.

It is almost certain that today's newlyweds will survive the next 10 years. As Table 2 shows, the probability of joint survival for this length of time for the couples selected in this study ranged from 924 in 1,000 to as high as 976 in 1,000. At the turn of the century the chances for this event were 10 to 15 percent less. □

*Differs from expected duration of marriage in that the figure applies only to marriages dissolved by death and does not make allowance for divorce or annulment

Table 1–Years of Joint Expectation of Life for Men and Women United States, 1900-02 and 1979-81

Age of Male	When Male is **Younger** Than Female by (Years)		Male Same Age as Female	When Male is **Older** Than Female by (Years)					
	5	2		2	3	4	5	10	15
1979-81									
18	46.9	48.1	48.8	49.4	49.7	—	—	—	—
19	46.0	47.2	47.9	48.5	48.8	49.1	—	—	—
20	45.1	46.3	47.0	47.6	47.9	48.2	48.4	—	—
21	44.2	45.4	46.1	46.7	47.0	47.3	47.5	—	—
22	43.4	44.5	45.2	45.8	46.1	46.4	46.6	—	—
23	42.5	43.7	44.3	45.0	45.2	45.5	45.7	—	—
24	41.6	42.8	43.5	44.1	44.4	44.6	44.9	—	—
25	40.7	41.9	42.6	43.2	43.5	[illegible]	44.0	45.0	—
26	39.8	41.0	41.7	42.3	42.6	42.8	43.1	44.1	—
27	38.9	40.1	40.8	41.4	41.7	42.0	42.2	43.2	—
28	38.0	39.2	39.9	40.5	40.8	41.1	41.3	42.3	—
29	37.1	38.3	39.0	39.6	39.9	40.2	40.4	41.4	—
30	36.2	37.4	38.1	38.7	39.0	39.3	39.5	40.5	41.2
35	31.8	32.9	33.6	34.2	34.5	34.8	35.0	36.0	36.7
40	27.4	28.5	29.2	29.8	30.0	30.3	30.5	31.5	32.2
45	23.3	24.3	25.0	25.5	25.8	26.0	26.2	27.2	27.8
50	19.4	20.4	21.0	21.5	21.7	22.0	22.2	23.1	23.7
55	15.9	16.8	17.3	17.8	18.0	18.2	18.4	19.3	19.9
60	12.8	13.6	14.0	14.5	14.7	14.9	15.1	15.8	16.3
65	10.0	10.7	11.2	11.5	11.7	11.9	12.1	12.7	13.2
1900-02									
18	32.3	33.2	33.9	34.5	34.8	—	—	—	—
19	31.6	32.6	33.2	33.8	34.1	34.4	—	—	—
20	31.0	32.0	32.6	33.1	33.4	33.7	34.0	—	—
21	30.4	31.4	31.9	32.5	32.8	33.1	33.3	—	—
22	29.8	30.8	31.3	31.9	32.2	32.4	32.7	—	—
23	29.3	30.2	30.8	31.3	31.5	31.8	32.1	—	—
24	28.7	29.6	30.2	30.7	30.9	31.2	31.4	—	—
25	28.1	29.0	29.6	30.1	30.3	30.6	30.8	32.0	—
26	27.5	28.4	29.0	29.5	29.8	30.0	30.2	31.3	—
27	26.9	27.9	28.4	28.9	29.2	29.4	29.6	30.7	—
28	26.4	27.3	27.8	28.3	28.6	28.8	29.0	30.0	—
29	25.8	26.7	27.2	27.8	28.0	28.2	28.4	29.4	—
30	25.2	26.1	26.7	27.2	27.4	27.6	27.8	28.8	29.7
35	22.3	23.2	23.8	24.3	24.5	24.7	24.9	25.8	26.6
40	19.3	20.3	20.9	21.4	21.6	21.9	22.1	23.0	23.6
45	16.4	17.4	18.0	18.5	18.7	19.0	19.2	20.1	20.7
50	13.6	14.5	15.1	15.6	15.9	16.1	16.3	17.2	17.8
55	11.0	11.9	12.4	12.8	13.1	13.3	13.5	14.4	15.0
60	8.7	9.5	9.9	10.4	10.6	10.7	10.9	11.7	12.3
65	6.7	7.3	7.7	8.1	8.3	8.5	8.6	9.3	9.8

Source: Computed by the Health and Safety Education Division of the Metropolitan Life Insurance Company from life tables prepared by the Bureau of the Census and the National Center for Health Statistics.

Table 2–Chances in 1,000 of Joint Survival for 10, 25, or 50 Years United States, 1900-02 and 1979-81

Age of Male	Years of Joint Survival											
	10	25	50	10	25	50	10	25	50	10	25	50
	Female Five Years Younger			Female Two Years Younger			Female Same Age as Male			Female Two Years Older		
1979-81												
18	—	—	—	976	932	552	975	925	535	975	921	515
19	976	927	547	975	924	525	975	921	507	974	917	487
20	975	924	520	975	920	497	974	917	479	974	913	458
21	975	920	492	974	916	469	974	912	450	974	908	429
22	975	915	464	974	911	440	974	907	420	973	902	398
23	975	911	435	974	906	410	974	901	390	973	896	368
24	975	905	405	974	900	380	974	895	360	973	889	337
25	974	899	375	974	893	350	973	888	330	972	881	307
26	974	892	345	973	885	320	973	879	300	972	872	277
27	974	884	316	973	877	290	972	870	270	971	863	248
28	973	876	286	972	867	261	971	860	241	969	852	219
29	972	866	257	971	857	232	970	849	213	968	840	191
30	971	855	229	969	845	205	968	837	186	966	828	165
35	960	786	106	957	772	88	954	761	74	951	748	60
40	933	689	32	933	670	23	929	655	18	924	638	13
1900-02												
18	—	—	—	884	677	229	879	670	212	875	663	194
19	888	681	233	879	669	210	874	662	194	870	655	176
20	883	672	214	874	661	192	870	654	176	866	647	158
21	878	664	196	870	653	174	866	646	158	863	639	141
22	873	655	178	867	645	157	863	638	141	860	631	125
23	869	647	161	863	637	140	860	630	125	857	623	109
24	865	639	143	860	629	124	857	622	109	854	614	94
25	862	630	127	857	620	108	854	613	94	851	604	80
26	858	622	111	853	612	93	850	604	80	848	594	67
27	854	613	96	850	602	79	847	594	67	844	584	55
28	850	604	81	846	592	66	844	583	55	841	572	45
29	847	594	68	843	582	54	840	572	45	837	560	35
30	843	583	56	839	570	44	837	559	35	834	546	27
35	825	516	16	821	497	11	817	482	8	813	465	5
40	801	428	2	795	405	1	789	386	1	782	364	*

*Less than 1.

Source: Computed by the Health and Safety Education Division of the Metropolitan Life Insurance Company from life tables prepared by the Bureau of the Census and the National Center for Health Statistics.

Regional Variation in Colon Cancer Mortality

The colon is one of the most common sites of cancer in populations in developed countries. An estimated 51,800 deaths from this malignancy will be registered in the United States in 1986, making it the nation's second leading cause of cancer mortality.[1] Colon cancer is expected to claim the lives of 24,800 men and 27,000 women—only lung cancer for both sexes and prostate cancer for men and breast cancer for women will account for more deaths from cancer in 1986. The past 30 years have seen little change in the death rates for men, but a sizable decrease of 27 percent for women.[2]

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The past 30 years have seen little change in the death rates from colon cancer for men, but a sizable decrease of 27 percent for women.

There is much geographic variation in colon cancer rates. The incidence of colon cancer is very low in Japan, other Asian countries, Finland and many developing countries as well. The incidence rates for migrants from these countries increase and approach those of Western cultures, however, in natives who emigrate to America. The adoption of a more Western lifestyle seems to be the source of increased risk, particularly when it includes a diet higher in fat and lower in fiber than was the custom in the native country. This association with diet may be a significant element in the etiology of this disease, one with obvious enormous preventive potential.

Regional Distribution of Colon Cancer Mortality

Colon cancer mortality rates differed both between the sexes and by geographic area. The following regional analysis of colon cancer mortality among whites is based on the 1980 population census and deaths that occurred in 1979, 1980, and 1981. The colon cancer data are for the period 1979-81, inclusive, and are those deaths assigned to International Classification of Diseases, Ninth Revision, Code 153. These data represent the latest years for which official figures are available and with which Metropolitan Life statisticians could compute rates by individual states and divisions within the country. Mortality rates are shown per 100,000 population in four 10-year age groupings between 35 and 74 and for the ages 35-74 combined. The combined death rate has been age-adjusted because of differences in the age composition of state populations.

Variation in Rates by Geographic Division

Colon cancer mortality rates are higher for white males than white females (Table 1, page 8). The age-adjusted death rate for males 35-74 was 32 percent higher than that for females. By age groups, male mortality rates were 11 percent higher than

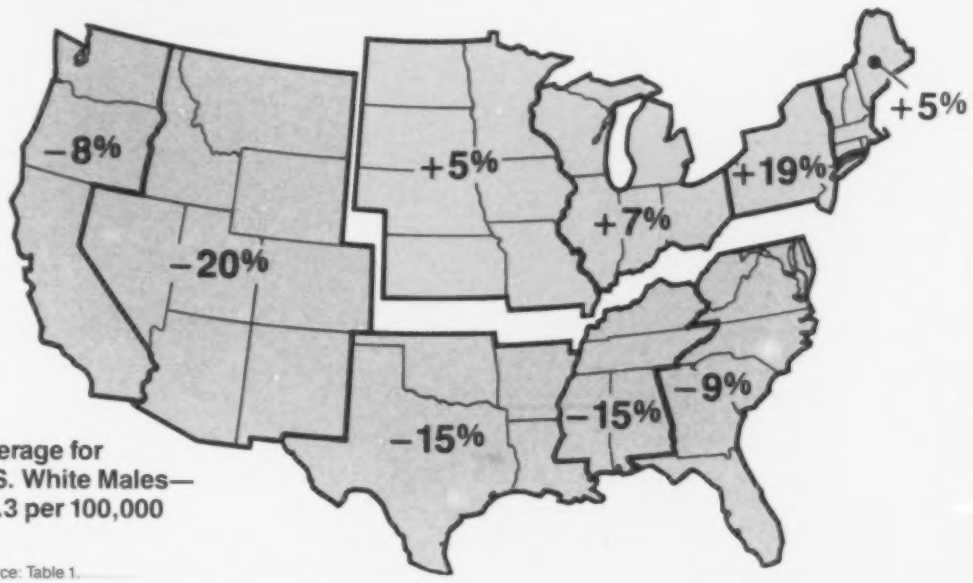
The age-adjusted death rate for males aged 35-74 was 32 percent higher than that for females.

Table 1–Mortality from Colon Cancer White Men Aged 35-74, United States, 1979-81

Area	Death Rate per 100,000 Ages 35-74*	Ages 35-44	Ages 45-54	Ages 55-64	Ages 65-74
United States	27.3	3.1	13.1	42.4	106.1
New England	28.8	3.0	12.6	42.4	119.8
Maine	26.9	†	9.9	40.6	108.3
New Hampshire	26.9	†	9.8	41.1	116.7
Vermont	26.2	†	†	30.3	117.1
Massachusetts	29.4	2.9	13.4	44.0	120.3
Rhode Island	30.4	†	12.7	42.2	132.8
Connecticut	29.0	2.5	13.6	42.3	120.6
Middle Atlantic	32.6	3.0	14.4	50.9	131.4
New York	33.1	3.5	14.1	51.9	133.0
New Jersey	32.8	2.5	13.5	49.0	139.8
Pennsylvania	31.9	2.7	15.5	50.7	124.7
East North Central	29.2	3.0	14.4	46.0	112.8
Ohio	29.4	3.1	14.3	46.9	112.8
Indiana	27.9	2.7	14.0	42.9	109.5
Illinois	31.7	2.9	15.2	47.1	128.8
Michigan	28.1	3.0	14.5	45.1	105.2
Wisconsin	26.8	3.1	13.4	46.2	95.3
West North Central	28.8	3.9	13.9	49.2	102.9
Minnesota	34.9	3.4	13.2	85.0	95.1
Iowa	29.4	3.4	15.4	47.0	109.0
Missouri	28.9	4.6	14.7	44.2	107.6
North Dakota	25.0	†	†	49.2	82.8
South Dakota	23.2	†	10.9	32.5	92.3
Nebraska	28.4	†	14.5	43.8	112.1
Kansas	26.5	4.6	13.2	39.4	100.8
South Atlantic	24.9	2.9	12.3	38.5	96.6
Delaware	32.8	†	13.9	50.3	123.3
Maryland	31.4	2.7	15.2	47.2	127.2
District of Columbia	26.1	†	†	47.5	102.0
Virginia	24.2	2.1	13.8	36.6	92.4
West Virginia	22.0	†	14.3	33.5	78.4
North Carolina	22.4	4.1	10.9	32.5	86.3
South Carolina	24.0	3.6	11.3	40.9	85.9
Georgia	19.2	1.5	9.2	30.8	75.2
Florida	26.6	3.4	12.6	41.4	102.7
East South Central	23.3	3.2	12.3	37.1	85.3
Kentucky	28.3	3.4	15.7	44.7	103.4
Tennessee	22.1	2.0	11.6	36.0	82.4
Alabama	19.9	4.1	8.2	31.0	75.5
Mississippi	23.3	4.3	16.5	35.8	73.6
West South Central	23.1	3.8	11.8	34.7	87.2
Arkansas	19.8	3.7	9.8	31.1	71.9
Louisiana	26.5	5.0	15.7	39.0	93.7
Oklahoma	22.9	3.2	9.8	31.7	96.7
Texas	23.0	3.6	11.6	35.1	86.5
Mountain	21.9	2.4	12.5	32.0	83.8
Montana	25.5	†	16.0	31.4	103.0
Idaho	18.2	†	10.2	28.5	65.6
Wyoming	16.2	†	†	31.9	48.4
Colorado	22.2	3.2	12.2	32.2	84.5
New Mexico	22.0	†	11.0	26.5	97.9
Arizona	22.7	2.9	13.8	32.6	84.6
Utah	18.9	†	8.7	33.1	71.4
Nevada	25.7	†	16.8	39.0	97.0
Pacific	25.2	3.0	11.2	37.8	101.9
Washington	21.3	2.9	8.8	34.7	82.6
Oregon	24.0	2.7	10.2	35.5	99.5
California	26.2	3.1	12.0	38.7	106.4
Alaska	17.5	†	†	36.9	†
Hawaii	24.5	†	†	39.9	98.8

*Adjusted on basis of age distribution of the United States total population, 1940.
†Fewer than 10 deaths, rate not computed.
Source: Computed in the Health and Safety Education Division of the Metropolitan Life Insurance Company, based on data from the Division of Vital Statistics, National Center for Health Statistics.

Figure A–Geographic Variation in Colon Cancer Mortality White Males Aged 35-74, 1979-81



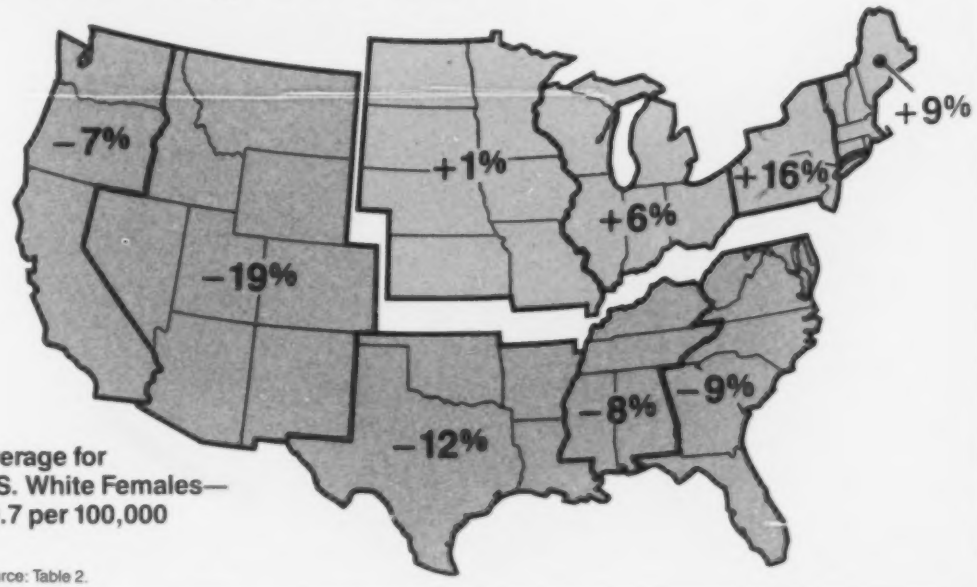
Source: Table 1.

female rates among the 35-44 year olds, 12 percent higher among 45-54 year olds, 29 percent higher among 55-64 year olds and 43 percent higher among 65-74 year olds.

Mortality rates increased with age, reaching a high of 106.1 per 100,000 for males and 74.0 for females 65-74. The rate of increase was the greatest between 35-44 and 45-54 age groups, where the rates quadrupled for both sexes. The rate of increase slowed with each succeeding age group, thereafter, with some slight regional differences apparent. Mortality rates from colon cancer varied appreciably from one geographic area of the United States to another. The geographic distribution of the age-adjusted death rates for colon cancer were similar for white males and white females 35-74 (Figures A and B). For each sex, the same four divisions within the United States registered rates in excess of the national total of 27.3 per 100,000 population for males and 20.7 for females. The Middle Atlantic states recorded the highest rates and the Mountain division recorded the lowest rates for both sexes.

The Middle Atlantic area recorded a rate 19 percent above the national rate for men (Figure A) and 16 percent above the national rate for women (Figure B). The East North Central division recorded the second highest rate for males (29.2 per 100,000—a rate 7 percent above the total) and the New England states ranked second in colon cancer mortality rates for females (22.6 or 9 percent above the total). The Mountain area

Figure B–Geographic Variation in Colon Cancer Mortality White Females Aged 35-74, 1979-81



Source: Table 2.

death rates were 20 and 19 percent lower than the U.S. total for males and females, respectively.

Variation in Rates for Males by State

The age-adjusted death rate also differed substantially between states. Among men 35-74, the rate reported in Minnesota (34.9 per 100,000) was 115 percent higher than the lowest, which was reported in Wyoming (16.2 per 100,000). The second highest rate was reported in New York, where the rate for these men was 21 percent above the national rate. Other states in which the male age-adjusted mortality was at least 20 percent above the total for the country were New Jersey and Delaware. The death rate in Alaska was the second lowest in the country and was 36 percent below the national total for males 35-74. Similarly low mortality was experienced in Idaho, Utah, Georgia, Arkansas and Alabama, each with rates at least 27 percent below the total.

The rates among the two younger groups of men fluctuated considerably because of the small numbers of deaths involved. Among white men 55-64, Minnesota registered the highest death rate—85.0 per 100,000—a rate that was more than twice the national rate for this age group. New York, Pennsylvania and Delaware each recorded rates above 50.0. The lowest rates for these men were registered in New Mexico and Idaho, where the mortality rate

Table 2– Mortality from Colon Cancer
White Women Aged 35-74, United States, 1979-81

Area	Death Rate per 100,000				
	Ages 35-74*	Ages 35-44	Ages 45-54	Ages 55-64	Ages 65-74
United States	20.7	2.8	11.7	32.9	74.0
New England	22.6	2.3	11.9	35.5	85.5
Maine	22.4	†	11.7	35.9	84.5
New Hampshire	25.0	†	10.3	45.9	94.3
Vermont	20.9	†	†	34.1	79.5
Massachusetts	21.8	2.2	11.8	33.5	83.3
Rhode Island	24.9	†	13.6	38.3	91.8
Connecticut	23.0	2.9	12.0	35.6	86.5
Middle Atlantic	24.1	2.6	13.6	38.4	88.0
New York	24.6	2.8	13.3	39.5	90.4
New Jersey	24.6	1.9	13.4	40.7	90.4
Pennsylvania	23.3	2.8	14.2	35.9	83.4
East North Central	22.0	3.0	11.7	34.4	81.4
Ohio	23.7	3.6	13.1	36.4	86.0
Indiana	22.7	4.5	11.5	35.5	80.7
Illinois	22.1	2.1	11.2	35.3	84.3
Michigan	20.3	2.8	11.4	29.7	76.7
Wisconsin	20.6	2.2	10.6	35.3	73.7
West North Central	21.0	3.7	12.8	33.5	70.2
Minnesota	19.8	3.2	11.9	34.4	62.8
Iowa	25.4	3.3	15.8	42.5	84.1
Missouri	20.7	4.1	12.6	31.0	70.7
North Dakota	18.2	†	†	28.2	72.5
South Dakota	19.7	†	16.0	23.2	67.4
Nebraska	20.1	4.3	12.2	31.3	65.9
Kansas	19.8	4.6	11.1	31.0	66.2
South Atlantic	18.9	2.8	10.9	30.8	64.8
Delaware	26.7	†	†	49.2	104.2
Maryland	24.9	1.8	12.7	42.4	91.9
District of Columbia	15.2	†	†	†	58.6
Virginia	17.5	2.7	11.3	27.4	58.8
West Virginia	17.0	†	11.2	26.6	56.2
North Carolina	16.6	2.9	10.3	26.9	54.4
South Carolina	17.5	3.3	10.4	28.0	58.2
Georgia	17.2	3.1	10.4	27.4	57.0
Florida	19.4	3.1	10.6	31.9	67.0
East South Central	19.1	3.1	11.4	29.7	65.9
Kentucky	21.8	2.8	13.0	35.3	75.2
Tennessee	19.6	3.4	12.0	29.0	69.4
Alabama	15.9	2.3	8.8	26.1	55.5
Mississippi	17.9	4.2	11.1	27.2	58.5
West South Central	18.2	2.9	10.8	28.1	63.8
Arkansas	17.9	4.2	11.5	26.1	59.2
Louisiana	19.0	3.0	10.6	29.7	68.0
Oklahoma	19.7	†	11.2	30.1	74.4
Texas	17.6	2.8	10.6	27.5	60.8
Mountain	16.8	2.5	9.3	27.0	59.5
Montana	18.5	†	10.4	33.2	62.7
Idaho	15.7	†	10.9	26.5	51.2
Wyoming	16.9	†	†	27.8	55.3
Colorado	19.1	2.8	10.9	30.8	66.5
New Mexico	15.4	†	†	25.8	53.7
Arizona	15.8	†	7.1	25.3	62.1
Utah	15.4	†	†	25.5	54.1
Nevada	15.8	†	16.0	19.3	50.5
Pacific	19.2	2.3	10.9	30.6	68.7
Washington	18.1	2.0	9.3	29.5	67.0
Oregon	18.0	†	12.0	28.6	60.7
California	19.6	2.4	11.1	31.2	70.2
Alaska	15.5	†	†	†	†
Hawaii	17.9	†	†	37.1	49.8

*Adjusted on basis of age distribution of the United States total population, 1940.

†Fewer than 10 deaths; rate not computed.

Source: Computed in the Health and Safety Education Division of the Metropolitan Life Insurance Company, based on data from the Division of Vital Statistics, National Center for Health Statistics.

was 38 and 33 percent, respectively, below the average. For white males 65-74, the rate in New Jersey was 32 percent higher than the total for this group. New York and Rhode Island each reported rates 25 percent above the total. The lowest rate for these men was reported in Wyoming, where mortality was 54 percent lower than the average

Variation in Rates for Females by State

The age-adjusted geographic death rates for women 35-74 differed by as much as 176 percent. The highest rate was reported in Delaware (26.7 per 100,000) and the lowest (15.2) was reported in the District of Columbia. Four other states registered mortality rates 20 percent or more above the national total, i.e., Iowa, New Hampshire, Rhode Island and Maryland. Other states in which female mortality rates were at least 25 percent below the national average were New Mexico, Utah and Alaska.

Substantial between-state variation was apparent within the four age groups studied. Among white women 35-44, the mortality rate was the highest in Kansas (4.6 per 100,000) and the lowest in Maryland (1.8). These rates were 64 percent above and 36 percent below the average rate of 2.8 for this age group. Among the oldest group of women in this study, the mortality rate per 100,000 in Delaware (104.2) was the highest and this rate was 41 percent above the average for this group. Other states in which the rates for women 65-74 were 20 percent or more above the average of 74.0 were New Hampshire, Maryland, Rhode Island, New York and New Jersey. Hawaii recorded the lowest colon cancer death rate per 100,000 among women 65-74—49.8—with a rate 33 percent below that for the average of all white women in this age group. Nevada and Idaho recorded similarly low rates (50.5 and 51.2); five other states reported a death rate at least 25 percent below the average, i.e., New Mexico, Utah, Wyoming, Alabama and North Carolina. The prognosis for colon cancer patients is very good when the disease is detected in a localized stage. If, however, the disease has spread, five-year survival rates drop from 87 to 47 percent, a fact that underscores the importance of early detection. Simple early detection methods are available and the American Cancer Society recommends that asymptomatic patients have the following procedures performed at designated intervals:

If the disease has spread, five-year survival rates drop from 87 to 47 percent, a fact that underscores the importance of early detection.

—an annual stool blood test for everyone over 50 years of age and
—a proctoscopy every three to five years after 50, once two annual examinations with negative results have occurred.

As indicated above, early detection of colon cancer can result in less complicated treatment regimens and can improve survival rates. In addition to these secondary preventive actions, research is now suggesting some primary prevention measures to be taken to reduce the risk of colon cancer. Modification of the diet to include *more* high fiber and *less* high-fat foods may lead to a reduction in risk of colon as well as some other cancers. □

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Guest Editorial
Preventing Cancer

The problem with cancer prevention is not cancer, but rather the outmoded public perception of it. Specifically, Americans do not seem to know that cancer is mostly a preventable disease and that its risks can be substantially reduced by modifying lifestyles and certain exposures.

Cancer is not the inevitable disease that it once was. Indeed, scientists estimate that from 50 to 90 percent of all cancers are promoted or caused by various personal and environmental factors. And further, at least 50 percent of cancers are preventable if we could take action on a simple, three-part message.

Smoking

First, stop smoking. Cigarette smoking causes about one-third of *all* cancers and 83 percent of lung cancers. Other sites affected by tobacco usage include the oral cavity and pharynx, larynx, esophagus, pancreas and bladder. Cigarette smoking coupled with excessive alcohol intake further increases certain cancer risks. Pipe and cigar smokers have lower risks than cigarette smokers but still higher than that for nonsmokers.

Dietary Constituents

Second, pay close attention to dietary constituents. A diet high in fat and calories and low in fiber and certain micronutrients and vitamins is associated with 10 to 35 percent of all cancers. Obesity is associated with endometrial, gall bladder, cervix, ovary, breast and colon cancer. Evidence is mounting which suggests that foods rich in beta-carotene, such as carrots, various green and yellow vegetables, reduce the risk of cancer and that vitamin C consumption may lower the risk of developing cancer of the esophagus and bladder.

Workplace Hazards

Third, be aware of workplace hazards. Industrial pollution of the occupational environment with certain dusts and fumes may be associated with another five percent of all cancers. Asbestos exposure increases the risk of lung and gastrointestinal cancers as well as mesothelioma. Exposure to vinyl chloride, chromates, benzene, aromatic amines and bischloromethyl ether are other substances that have been shown to increase cancer risks. Some of these exposures in conjunction with tobacco usage further add to the risks of developing cancer.

There are other factors that contribute to cancer risk, as well. They include reproductive and sexual behavior, certain infections, drugs, ionizing radiation, air and water pollution and various consumer products. Taken as a group, these factors may account for approximately 15 percent of the cancers at various sites.

Public Awareness

Despite the work yet to be done, we have made much progress, however, in cancer health education. Public and private resources have been mobilized to persuade the public to adopt more healthful lifestyles, i.e., not smoking, moderate alcohol intake, avoiding workplace carcinogens. Through these efforts, an estimated 37 million Americans have quit smoking and the public has become more weight, nutrition, and fitness conscious. In only 30 years we have changed from a pessimistic to a more hopeful view of how we can reduce the risk of cancer. If public awareness about cancer risks continues to increase, we could near an exciting goal: preventing those cancers that are, indeed, preventable. □

Lawrence Garfinkel
Vice President for Epidemiology
and Statistics/Director of Cancer Prevention
American Cancer Society

Capsule Briefs

are timely literature selections with broad reader interest.

Death (Certificate) Here Is Thy Sting

Death certificates incorrectly noted underlying causes of death in 29 percent of cases, or disagreed on the specific disease causing the fatality in another 26 percent. These conclusions were reached by the authors in a Connecticut study of 272 randomly selected 1980 autopsy reports. Deaths due to neoplasms (cancer) were most accurately diagnosed; those due to diseases of the respiratory or digestive systems showed the highest rates of disagreement. In an era in which medical data are increasingly used to evaluate care, "the autopsy remains an important method for ensuring the quality of mortality statistics." (Kircher, T., *et al, New England Journal of Medicine* 313:1263-9, 1985.)□

Whither Medical Care in the 1990s?

This report is from a fascinating meeting convened by Eli Ginsberg and held at Cornell University Medical College in March 1985. All the attendees were experts on the U.S. medical care system. The invitation list bore two stipulations from Professor Ginsberg: (1) that all be under 40 years old and (2) have potential to become health policy leaders. Far too complex to summarize, this precis by the author provides a glimpse into the high quality of the thinking from such an audience. For all their acumen, however, the attendees held widely divergent views about the size and shape of things to come. (Iglehart, J.K., *Health Affairs* 4(3):120-127, 1985.)□

New Red Menace on Campus

In this survey of reported measles cases during the first half of 1985, it was found that 18.5 percent (334) occurred on 25 college campuses in 14 states and the District of Columbia. This proportion of measles cases on campuses was 6 times greater than in 1984, and approached the all-time high of 19.8 percent reached in 1983. The reasons for the outbreaks vary from foreign travel by students to areas where measles are endemic, to schools unwilling to impose immunization requirements. Some schools are requiring students to show proof of immunization before entrance; e g., the University of Michigan has had such a rule since September 1985. *(Morbidity and Mortality Weekly Report* 34(29): 445-449, 1985.)□

Is It All Simply Pap?

Pap smears have been highly touted for years as an effective and efficient means to detect cervical cancer before it has spread. Now comes an editorial review in a prestigious British medical journal royally challenging those assumptions. After an analysis of recent experience in England and Wales with Pap smear use and the trends of cervical cancer survival, a new conclusion was reached: 40,000 smears and 200 excision biopsies (which normally follow highly suspicious smears) were required to save just one life. The editors note that this was "a grievously poor cost/benefit ratio." In that country, where care is rationed, it may be that use of the Pap smear will diminish. If the reviewer is correct, health in the United Kingdom may not suffer from that decision. (Editorial, *The Lancet* 1:363-4, 1985.)□

Demographics of Physician Medicare/Medicaid Fraud

Here is a seldom-discussed social problem: fraud by physicians involving Medicare and Medicaid. In this report were 147 cases of physicians who submitted fraudulent charges from 1977 through 1982. California and New York had the most cases (41 and 25, respectively). Of the total, 36 percent were foreign medical school graduates. Meharry Medical College, Tenn. had the most (6), University of California, Irvine (5), University of Loma Linda, Cal. (4); University of Louisville, Ky. (3). Family/general practitioners (27.2 percent), psychiatrists (18.4 percent), and surgeons (10.9 percent) were the most prevalent offenders. Substantial resources are spent each year finding the guilty, which might be better spent expanding access to medical care. (Pontell, H.N., *et al*, *Medical Care* 23(8):1028-31, 1985.)□

Go in Peace?

Since Peace Corps Volunteers (PCVs) are mostly young men and women, their causes of death abroad should reasonably be expected to be similar to their age mates at home. That assumption was affirmed by this study of the causes of death of 185 PCVs from 1962 through 1983. Unintentional injury was responsible for 70 percent of all deaths during this period. Vehicular crash injury was the leading cause. Suicide accounted for 5 percent (1962-83), but may be on the rise: from 1981 to 1983 the percentage of deaths attributed to suicide had risen to 13. It appears that PCVs need a better program of injury control and depression surveillance. (Hargarten, S.W., and Baker, S.P., *JAMA* 254(10):1326-1329, 1985.)□

Grim Portrait of Postwar World

Virtually all health risks pale before the pictures that are emerging from the computerized studies of the world after a nuclear war. While much attention has focused on the "nuclear winter" issue, this new report, based on a study by the Scientific Committee on Problems of the Environment, finds that reduced global temperatures may be the least of mankind's problems. Mass starvation may be the most severe problem because of the disruption of agricultural productivity. This could become the primary cause of death after such a war. A grim portrait indeed for the inhabitants of the big blue marble. (Smith, R.J., *Science* 229:1245-46; see also, Malone, R.C., *et al*, *ibid* 230:317-19, 1985 for related article.)□

What Protects Best From Stress?

By what means does contact with others protect individuals from stress? The literature in recent years has made the association quite clear. These authors focus their attention on two conjectures: Does the protection arise from social support by friends and family, or is that support more like a "buffer" from the harsher world? The authors, in a careful analysis of the literature, find that both social mechanisms play an important part in maintenance of healthy functioning of persons. The implications of their findings are as broad as the range of concern for mental health in humans. (Cohen, S., and Willis, T.A., *Psychological Bulletin* 98(2):310-357, 1985.)□

Suicide: An Update

Sudden death is almost always associated with a sense of shock and grief among family and friends. However, the impact of suicide is worse because it also raises questions like "what if?"

The burden of suicide on United States society has remained numerically steady in the past three years. During 1985 an estimated 28,500 persons—predominately men—took their own lives. By comparison, in 1984 the provisional count of such deaths was 29,000 and the official total in 1983 was 28,295.

Suicide is the eighth leading cause of death in the United States and accounts for almost two percent of all deaths each year.

Suicide is the eighth leading cause of death in the United States and accounts for almost two percent of all deaths.

Although the total number of suicide deaths is relatively small compared, for example, to the one million from the major cardiovascular diseases and the half million deaths from cancer, their apparent preventability and emotional consequences make them seem a heavier problem for society. People who commit suicide often exhibit danger signals that express their intentions. An increased public awareness of suicidal symptoms, such as sudden mood changes, giving away prize possessions, or expressing self-destructive thoughts, may help potential victims receive needed mental health services.

Emphasis on Causation

Throughout history, scholars have puzzled over the "whys" behind suicides. Louis I. Dublin, a Metropolitan Life epidemiologist and statistician, was one of the first to call attention to the seriousness of the public health challenge that suicide represents.[1] By 1972 over 7,000 books and articles had been written on it as a public health problem.[2] After World War II, publications (which benefited from the increased knowledge gained through psychological research), switched emphasis from descriptions of the suicide problem to focus more on its causation.[3] Researchers began to ask why, under seemingly similar circumstances, some people killed themselves while others did not. Presently, scholars at the Yale School of Medicine, Depression Research Unit, after analyzing familial studies, have found, for instance, that depression in an adult increased the risk of depression in other family members.[4,5] Most current efforts by the researchers are aimed at causes of the suicide problem, and ultimately keys to its prevention.

Coinciding with the recent relatively stable death count from suicide, age-adjusted mortality rates have not exhibited any significant variation. In 1984 the provisional age-adjusted death rate was 11.6 per 100,000 population, similar to the 11.4 in 1983—and comparable to 1980. In 1950 the age-adjusted death rate was 11.0 per 100,000. It was 10.6 per 100,000 in 1960 and rose to 11.8 in 1970.

Contrasting Trends by Race and Sex

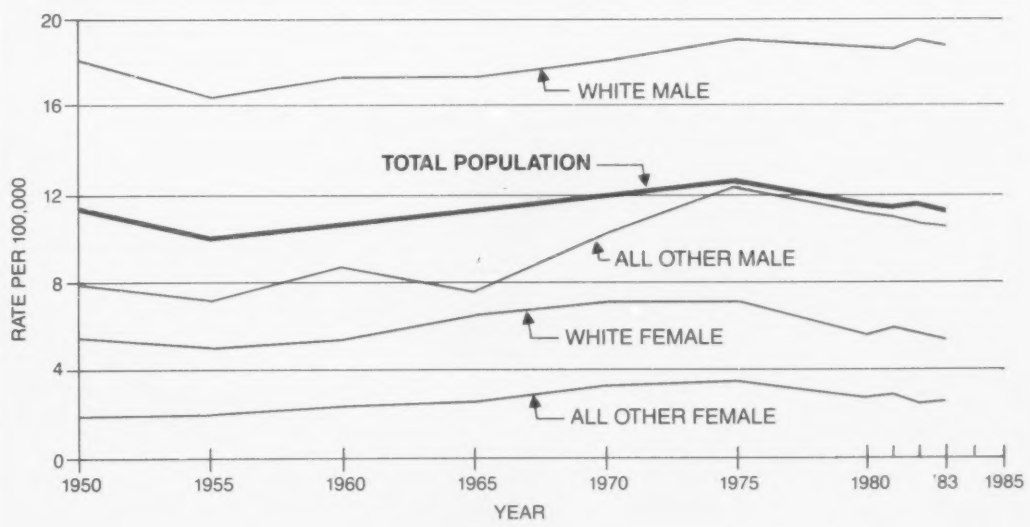
Compared with the overall picture of relatively steady mortality rates, analysis of suicide data by race and sex reveals

contrasting trends. Among men, the age-adjusted death rate for whites fell slightly after 1950, then rose and remained around 17 per 100,000 between the mid-1950s and 1960s. It increased to 19 per 100,000 by the mid-1970s and then remained at this level. A similar pattern was exhibited for nonwhite men before 1965, after which a significant rise in the death rate occurred. In 1970 the ratio of white to nonwhite age-adjusted death rates decreased to 1.8 to 1; before then, white men's rates exceeded that of nonwhite men by twofold or more.

In the past decade, among men, nonwhites had more favorable mortality experience. The death rate from suicide for nonwhite men peaked at 12.3 per 100,000 in 1975 and declined steadily thereafter. Among white men, the age-adjusted death rate had also risen to a post-1950 high of 19.2 per 100,000 in 1975 and then receded, only to gradually increase again, reaching 19.4 per 100,000 in 1982 and 19.3 per 100,000 in 1983.

The early 1970s were also a period of higher suicide mortality among women. The death rate for white women rose to 7.2 per 100,000 in 1970 before gradually declining to 5.6 per 100,000 in 1983 (almost the same rate as in 1950). The highest mortality rate for nonwhite women was recorded in 1975—namely, 3.5 per 100,000. Currently the rate is 2.6 per 100,000, roughly the same as in 1965. Figure A shows the trend in mortality rates by race and sex in the period under review.

Figure A–Trend in Age-Adjusted Suicide Rates, by Race and Sex United States, 1950-83



Source: Various reports of the National Center for Health Statistics.

Why Women Succeed Less Often

It has long been pondered why women *attempt* suicide more frequently than men, but succeed less often. Between 1950 and 1983 over three times as many men died at their own hands than did women. The higher death toll among men reflected the method chosen to end life. Two-thirds of men committing suicide selected firearms, while the proportion among women was two-fifths. Hanging was the second leading cause of suicide deaths among men (15 percent) while over one-fourth (26 percent) of the women favored poison.

Between 1950 and 1983 over three times as many men died at their own hands than did women.

Historically, suicide was a significant phenomenon only among white men—especially those aged 45 and over. But, since 1950 the death rate among men at these ages has declined. Regrettably this change was offset by a concomitant rise among men aged 15-44.

Fatalities Between Ages 15-44

Examination of trend data since 1950 reveals that almost two-thirds of the deaths from suicide occurred among persons 45 and over. More than a third of those fatalities were between the ages 15-44; there were fewer than 40 deaths at ages under 15. By 1980, the proportion of suicide deaths at ages 45 and over had sharply declined to around two-fifths, while the percentage of fatalities at ages 15-44 rose to roughly three-fifths. During this period the number of children (that is, under age 15) who took their own lives nearly quadrupled to 142. Currently, the mortality toll among youngsters has risen to approximately 300—an alarming increase with significant future import.

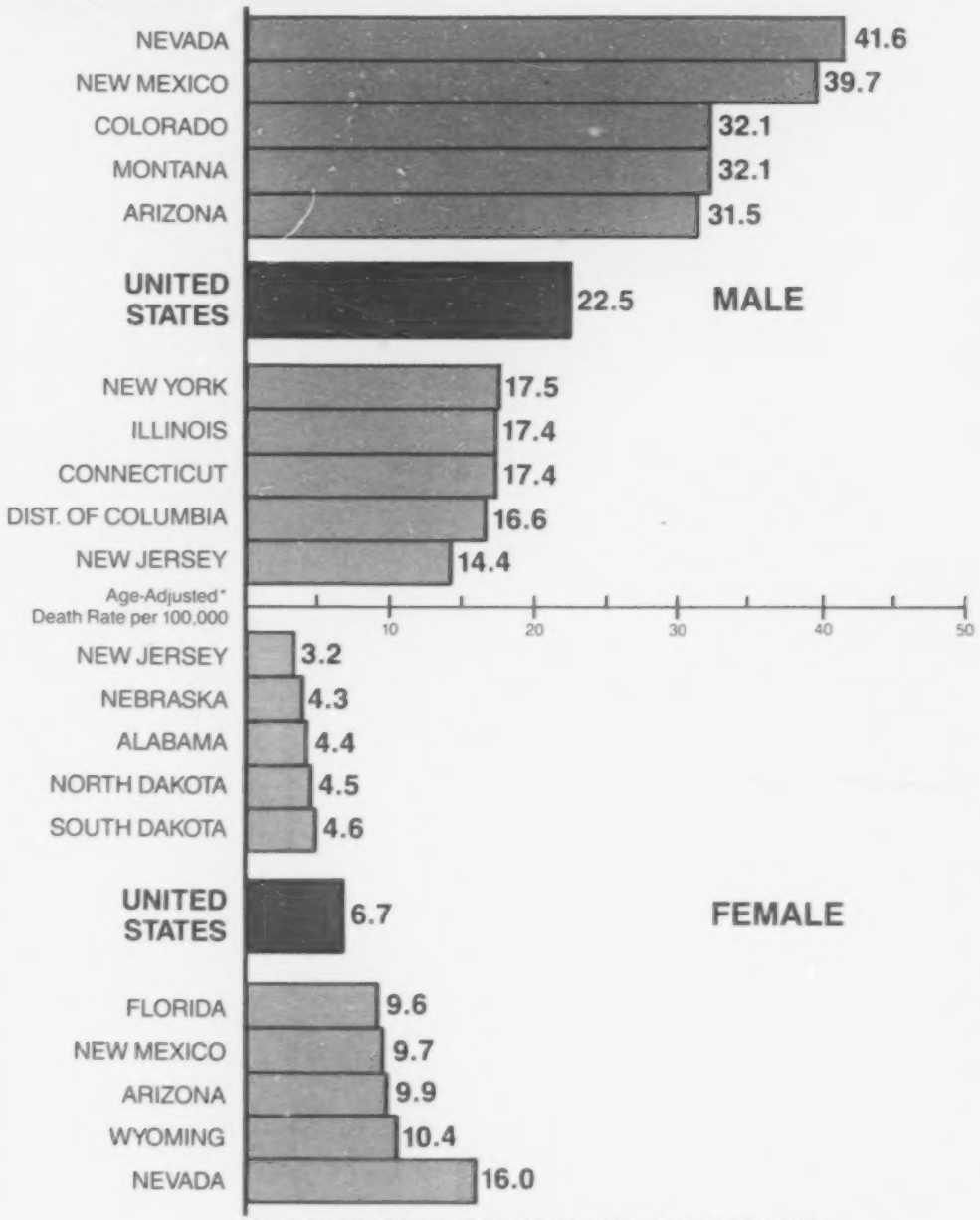
Trend data since 1950 reveal that almost two-thirds of suicide deaths occurred among persons 45 and over.

Notwithstanding the disturbing trend among children, most of the deaths from suicide in the United States occur in the three age brackets comprising the 15-44 age group. Nationally, the proportion of deaths during 1983 in each of these age groupings was fairly similar—namely 17.1 percent at ages 15-24; 22.4 percent at ages 25-34; and 15.2 percent at ages 35-44—amounting to almost 55 percent of all suicide deaths.

Geographic Variations for Men

There are marked geographic variations in the suicide death toll among persons aged 15-44. The age-adjusted death rate for men in the United States during the three-year period 1979-1981 was 22.5 per 100,000. The suicide mortality rate in the Middle Atlantic division of the country was 18.4 per 100,000, while in the Mountain division the reported rate was 45 percent larger than the national average, namely 32.7 per 100,000. The current relative ranking of these geographic divisions is unchanged from the positions occupied during 1959-61 and 1969-71 (see Table 1 on page 20).

Figure B—States With Highest and Lowest Mortality From Suicide
Population Aged 15–44, by Sex
United States, 1979–81



*Adjusted on basis of age distribution of the United States total population, 1940.

Table 1—Age-Adjusted Mortality Rate From Suicide, Males Aged 15-44 United States, 1959-61 to 1979-81

Geographic Division	Death Rate per 100,000		
	1959-61	1969-71	1979-81
UNITED STATES	13.9	17.8	22.5
New England	12.7	16.3	20.0
Middle Atlantic	10.6	13.1	18.4
East North Central	12.6	16.7	21.3
West South Central	13.2	16.3	21.1
South Atlantic	16.4	18.2	23.0
East South Central	13.5	17.5	20.9
West North Central	12.6	16.8	24.1
Mountain	21.7	27.4	32.7
Pacific	18.2	24.8	25.1

Source: Computed by the Health and Safety Education Division of the Metropolitan Life Insurance Company, from various reports of the National Center for Health Statistics and Bureau of the Census.

Among individual states suicide mortality rates varied as much as 300 percent.

Among individual states mortality rates varied as much as 300 percent. During 1979-81 the death rate from suicide for men aged 15-44 was only 14.4 per 100,000 in New Jersey but was 41.6 per 100,000 in Nevada. An extremely high rate was also reported in New Mexico—39.7 per 100,000.

Warning Signs in Teenage Suicides Can Be Detected

A Word From the American Academy of Pediatrics

Adolescent suicide has become a national concern, capturing the attention of television fiction as well as hard news reports. The media recently have reported the startling news that teen suicides sometimes occur in clusters—one suicide in a community often can stimulate a string of suicides among young people attending the same high school or group of schools.

Suicidal tendencies are detectable. Studies show that teenagers who consider killing themselves give warning signs before their suicide attempts. The warning signs include many standard indications of depression:

- Noticeable change in eating and sleeping habits
- Withdrawal from friends and family
- Persistent boredom
- Decline in quality of school work
- Violent or rebellious behavior
- Running away
- Drug and alcohol abuse
- Unusual neglect of personal appearance
- Difficulty concentrating
- Radical personality change
- Psychosomatic complaints

A teenager who is planning to commit suicide might give verbal hints such as "I won't be a problem for you much longer," "Nothing matters," or "It's no use." The adolescent also might make "final arrangements" such as giving away favorite possessions or

while death rates less than half as large were experienced in Iowa, Nebraska, South Carolina, Mississippi, Massachusetts, New York, Connecticut, Illinois and the District of Columbia.

During 1979-81 Nevada and New Mexico reported the highest death rates from suicide for men aged 15-24 and 25-34; New Jersey the lowest.

Nevada and New Mexico were in the unenviable position of reporting the highest death rates from suicide for men aged 15-24 and 25-34. At ages 35-44, the death rate was highest in Wyoming, closely followed by that in Nevada. On the other hand, the suicide death rate was consistently lowest in New Jersey. Another constant was the low death rate in each of the three age groups in the Middle Atlantic division and the high rates in the Mountain states.

Nationally, when examined by gender, suicide is mainly a problem among men—their death rates are 2½ to three times greater for ages 15-44. Some notable excep-

throwing away personal mementos.

Teenagers who commit suicide often feel that nobody needs them—that nobody cares. Many adolescent suicides occur shortly after a loss of some kind—the death of a friend, the breakup with a boyfriend or girlfriend, or parents' divorce.

Some estimates hold that adolescent suicide is the third leading cause of death among teenagers. Parents, brothers or sisters, friends and teachers who notice any signs that indicate the possibility of suicide should discuss them with the child or teenager. Don't be afraid that talking about suicide will cause the youngster to do it. Frank discussions about his or her feelings can have the opposite effect. Professional help should be sought if there is reason for serious concern. Sources of help include pediatricians, child psychiatrists, "hot line" services, local medical societies, and other physicians. Many medical organizations recommend that parents join children in viewing television broadcasts about suicide to discuss their feelings afterward. Most important, if your child ever talks about committing suicide, don't dismiss the youngster's comments. Deal with his or her concerns in an open manner. Take action promptly. □

Reprinted from *Young Health*, American Academy of Pediatrics, Winter 1985.

Nationally, when examined by gender, suicide is mainly a problem among men.

tions to the general sex ratio occur, though. Take Nevada, for instance, where the age-adjusted death rate from suicide for women aged 15-44 (16 per 100,000) was greater than the rate for men in New Jersey.

Geographic Variations for Women

Geographic variations for women occur, too. Wyoming reported the second highest death rate among women—10.4 per 100,000. Both Nevada and Wyoming are in the Mountain division of the country and, as a result, the overall death rate for the area (9.1 per 100,000) was the highest for women in the country. In the Pacific division women also experienced a high suicide mortality rate—due mainly to the 9.1 per 100,000 death rate in California. On the more favorable side, New Jersey reported the lowest mortality rate for women from suicide—3.2 per 100,000. No other state reported a women's death rate below 4 per 100,000, although 9 states experienced rates between 4 and 5 per 100,000. For each of the three age groups analyzed in this report, the death rates were lowest in New Jersey and highest in Nevada. Figure B on page 19 presents the five states with the highest and lowest death rates from suicide for men and women separately. Geographic details of death rates for each of the three age groups can be seen in Table 2.

True Magnitude of the Problem

Almost 100,000 people were reported to have committed suicide during the past three years according to published mortality statistics. Unfortunately, this figure is widely believed by experts to be significantly understated, in part because of the stigma that society still attaches to taking one's own life.[6] As a result, the actual cause of death may be misreported on death certificates. In addition, fatalities attributed to accidents could, after investigation, be reallocated to suicide in many cases. Too, suicide statistics do not include lifestyles or chronically inflicted biological insults such as alcohol or drug abuse. The designations as "suicide" would necessitate estimates of intent, or levels of understanding by attending physicians that would be difficult or impossible to validate in most cases.

The true magnitude of the problem of "intentional" suicides is underscored by studies that estimate unsuccessful attempts to be 10 times greater than reported suicides.[7] In an effort to reduce the frequency of overt suicide, prevention centers and educational programs have been set up throughout the country. Additionally, research into the association of depressed parents and onset of depression or anxiety in offspring may lead to interventions which may prevent future suicides. □

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7 Choron, J., op. cit., p. 49.

Table 2—Mortality From Suicide, Population Aged 15-44, by Sex United States, 1979-81

Area	Death Rate per 100,000							
	Male				Female			
	15-44*	15-24	25-34	35-44	15-44*	15-24	25-34	35-44
United States	22.5	19.9	25.4	22.5	6.7	4.5	7.3	8.9
New England	20.0	17.8	23.2	19.0	5.6	3.2	6.1	8.1
Maine	24.9	21.2	28.9	25.1	8.0	†	7.8	14.1
New Hampshire	23.9	23.4	24.8	23.5	7.0	†	†	12.6
Vermont	28.9	29.6	30.1	26.6	9.2	†	†	†
Massachusetts	18.3	15.8	22.2	17.1	4.9	2.8	6.0	6.4
Rhode Island	23.6	22.5	27.2	20.8	6.5	†	†	†
Connecticut	17.4	14.9	20.2	17.3	4.7	3.6	4.7	6.1
Middle Atlantic	18.4	16.5	21.2	17.5	4.9	3.3	5.3	6.6
New York	17.5	14.9	20.7	17.0	5.2	3.9	5.6	6.4
New Jersey	14.4	14.8	14.4	13.9	3.2	1.6	3.8	4.5
Pennsylvania	22.3	19.8	26.2	20.9	5.7	3.6	5.8	8.3
East North Central	21.3	19.7	23.9	20.4	6.3	4.1	6.6	8.7
Ohio	23.0	20.5	25.5	23.4	7.1	3.7	8.2	10.4
Indiana	21.5	18.3	24.1	22.5	4.8	3.0	5.2	6.6
Illinois	17.4	16.8	20.1	15.1	5.3	4.4	5.1	6.6
Michigan	22.8	21.2	26.0	21.2	7.0	4.3	7.5	10.0
Wisconsin	24.2	23.8	25.7	23.0	6.8	5.0	6.4	9.5
West North Central	21.1	20.0	23.5	19.7	5.8	3.8	6.2	7.9
Minnesota	20.9	21.6	22.5	18.0	6.2	4.2	6.5	8.4
Iowa	19.8	16.7	22.5	20.7	4.8	2.4	5.7	6.7
Missouri	21.3	19.1	24.6	20.2	6.6	4.4	6.4	9.7
North Dakota	22.0	26.2	20.1	†	4.5	†	†	†
South Dakota	25.3	25.8	22.1	28.5	4.6	†	†	†
Nebraska	19.2	18.6	20.0	19.2	4.3	†	†	†
Kansas	22.8	20.7	28.2	19.1	6.0	3.9	8.1	6.3
South Atlantic	23.0	19.3	25.5	24.9	7.1	5.0	7.7	9.2
Delaware	23.8	27.6	19.4	24.1	7.0	†	†	†
Maryland	20.5	19.5	23.8	18.0	5.3	3.5	5.4	7.4
Dist. of Columbia	16.6	13.8	23.6	†	†	†	†	†
Virginia	24.6	20.7	27.0	26.8	6.7	4.2	7.0	9.6
West Virginia	22.2	16.9	23.4	27.6	6.0	4.4	6.5	7.6
North Carolina	20.2	16.6	21.0	23.9	6.8	4.4	7.0	9.6
South Carolina	19.1	16.0	21.6	20.4	5.7	3.7	7.9	5.6
Georgia	22.2	17.0	24.9	25.7	7.2	5.7	7.1	9.2
Florida	27.7	23.2	31.4	29.4	9.6	7.2	10.8	11.2
East South Central	20.9	16.6	22.5	24.8	6.2	4.1	6.8	8.4
Kentucky	21.8	17.6	23.9	24.7	7.1	4.1	8.4	9.5
Tennessee	22.5	17.5	24.0	27.3	7.3	4.6	8.7	9.2
Alabama	20.0	15.1	21.2	25.1	4.4	3.7	3.7	6.0
Mississippi	18.1	16.0	19.6	19.2	5.9	3.9	5.8	8.6
West South Central	24.1	22.0	27.2	23.2	7.4	5.2	8.4	9.1
Arkansas	20.3	18.0	20.9	22.7	5.6	3.6	7.6	6.0
Louisiana	23.4	21.6	26.5	22.3	7.6	6.1	8.8	9.5
Oklahoma	27.2	24.8	30.7	26.3	8.4	7.2	9.3	8.9
Texas	24.1	22.1	27.5	22.9	7.4	5.1	8.3	9.4
Mountain	32.7	30.7	35.5	31.9	9.1	6.1	9.4	12.8
Montana	32.1	31.2	34.5	30.6	6.4	†	†	†
Idaho	27.3	29.7	29.6	21.4	4.9	†	†	†
Wyoming	31.1	28.7	28.2	37.5	10.4	†	†	†
Colorado	32.1	27.2	35.4	34.7	9.0	6.0	8.7	13.1
New Mexico	39.7	43.5	39.7	34.7	9.7	6.0	8.9	15.4
Arizona	31.5	30.2	36.0	27.9	9.9	6.6	11.2	12.8
Utah	28.8	22.5	31.3	34.2	7.5	6.2	†	11.6
Nevada	41.6	41.2	46.6	36.2	16.0	11.5	20.1	17.0
Pacific	25.1	21.1	29.0	25.7	8.8	5.9	9.6	11.5
Washington	25.2	23.2	28.4	24.1	8.4	5.4	9.7	10.7
Oregon	26.6	23.8	29.1	27.4	7.8	6.3	7.8	9.7
California	25.0	20.3	29.3	26.1	9.1	5.9	9.9	12.2
Alaska	27.8	31.8	26.9	23.7	9.2	†	†	†
Hawaii	21.0	21.6	23.2	17.7	5.7	†	†	†

*Adjusted on basis of age distribution of the U.S. total population, 1940.

†Fewer than 20 deaths; rate not computed.

Source: Computed by the Health and Safety Education Division of the Metropolitan Life Insurance Company, based on deaths from the Division of Vital Statistics, National Center for Health Statistics, and 1980 Census population from the Bureau of the Census.

Metropolitan Life School Health Education Survey

How Healthy is the Curriculum?

The Metropolitan Life Foundation funded a survey of comprehensive school health education programs in U.S. public schools during the 1984-85 school year. The survey was designed to learn the nature and the type of education our children were receiving about one of the most important aspects of their current and future lives—their health. Survey results represented the health education experiences of 7.6 million public school children in all 50 states.

While all agree that children's education about health and health-related topics is important, the survey found that only one-third of the nation's children received comprehensive health education during the last school year. The survey results also indicated:

- in lower grades (1-6) 81 percent of health education programs are taught by regular classroom teachers who have no special training in health education.
- in junior and senior high school, only about one-half of the health education classes are taught by certified health educators.
- in lower grades, personal health and hygiene predominate as health topics, followed by accident prevention for kindergarteners and nutrition for 1-6 graders. In the upper grades substance abuse and family life topics receive emphasis in the health education curriculum.
- though most school superintendents acknowledged the importance of updating the health education skills of their teachers, regular classroom teachers—those professionals most often involved in health instruction—were found to be the least likely to receive in-service training.
- family life is ranked No. 6 out of 12 topic areas in amount of perceived importance or relevance to the needs of the children in the school district; this despite the alarming numbers of teenage births in this country reported in the Jan-Mar *Statistical Bulletin*.
- emotional health and understanding stress were ranked among the top four health education concerns of the school districts surveyed—an obvious reflection of the growing awareness and fear of the issue of teenage suicide. □

For a copy of this survey, write:

Health and Safety Education Division, Dept. SB, Metropolitan Life, One Madison Ave. New York, N.Y. 10010

Costs of Cholecystectomy: Variation by Region

Close to half a million cholecystectomies are performed annually in the United States, making the removal of the gallbladder the "most common interabdominal procedure in general surgery."[1] Between 1972 and 1983 the number of these surgeries rose 22 percent in the United States.[2] A cholecystectomy is more frequently performed on women than men, and the average age of most patients is in the mid-forties. This surgical procedure typically results in more than a week of hospitalization.

Considerable geographic variation in cholecystectomy rates persists within Canada and the United States as well as between these countries and England, France and Scotland. The surgical rates differ markedly between North America and England despite similar prevalence rates of gallstones in these countries.[3] Such variations suggest that factors other than morbidity account for the differences in cholecystectomy rates. There seems to be a lack of consensus about appropriate treatment for gallstones, the indications for surgery and/or the natural history of this disease.[4-6] The reasons that cholecystectomies are performed at varying rates in various locations continue to be studied and remain to be explained.

The surgical rates differ markedly between North America and England despite similar rates of gallstones in these countries.

The Metropolitan Study

Not only do cholecystectomy rates differ by geographic area, but the average charges for this procedure also vary. An analysis of 7,545 cholecystectomies performed between January 1, 1982, and June 30, 1983, on employees of companies insured under group health contracts by Metropolitan Life Insurance Company revealed major regional variation in charges for this operation. The average total medical care charges for a cholecystectomy during this period was $5,450, with as much as a 234 percent variation in average costs by state. The Metropolitan Life study reports charges for all forms of cholecystectomy—those with and those without common bile duct exploration. Presentation of data will be confined to those 28 states in which at least 25 simple cholecystectomies were performed on males; these data represent 90 percent of the reported cases in the Metropolitan Life file.

The average total medical care charges during January 1982-June 1983 was $5,450, with as much as a 234 percent variation in average costs by state.

The majority of cholecystectomies are performed without exploring the common bile duct for gallstones. Of the total cases reviewed, only 22 percent included the more complicated procedure. Seventy percent of operations with bile duct exploration were performed on women whose median age was approximately 42. Men having this surgery averaged 10 years older. These sex and age differentials were similar for the patients who underwent a cholecystectomy without common bile duct exploration. The geographic distribution of these two forms of surgery was almost identical for all nine divisions of the country (see Table 1). The average total cost was approximately 16 percent higher for a cholecystectomy with common bile duct exploration than one without, amounting to a dollar difference of $820. An extra day of hospitalization was observed for the more expensive procedure and this resulted in a difference of $190 in average charges for room and board. As might be expected, the largest difference in costs for these two types of cholecystectomy was apparent in the average charges for ancillary services (i.e., laboratory, radiology, operating and recovery room, etc.). While these charges accounted for similar proportions of the hospital bill (65 percent with bile duct exploration and 63 percent without), the ancillary charges for the former procedure were 20 percent higher, $2,970 versus $2,470, respectively.

A 35 percent difference existed for both procedures between the highest average total charge reported for the Pacific region and the lowest charge reported for the East South Central region. The differences in the charges between these two kinds of surgery were consistent by sex, region and individual states. Total and individual costs were more pronounced and more variable between geographic divisions and states than between types of surgery. Thus, the data were combined, weighted averages were computed and the results analyzed for *all* cholecystectomies.

As shown in Table 1, more than half of all cholecystectomies (54 percent) were performed in three of the nine geographic divisions of the country—East North Central, South Atlantic and West South Central. The New England division reported the lowest proportion of these surgeries (5 percent). The average total charges for this surgery varied considerably by geographic division. The highest average total cost was reported in the Pacific division—$6,740—and this cost was 24 percent above the national average. The lowest total charges were reported in the East South Central area, where the costs were 8 percent below the national average and 26 percent below that for the Pacific region. As seen in Figure A, two-thirds of the divisions recorded average charges below the average for the country.

Cost Variation by State

Substantial variation in average total charges for a cholecystectomy was evident between states. The highest total charge was reported in Nevada, $8,930, and the lowest was in Delaware, $3,820 (data not shown), for a difference of 234 percent. Of the states in this analysis, however, Florida (Metropolitan Life activity in group insurance is principally in the Miami area) led all in high charges, reporting total costs of

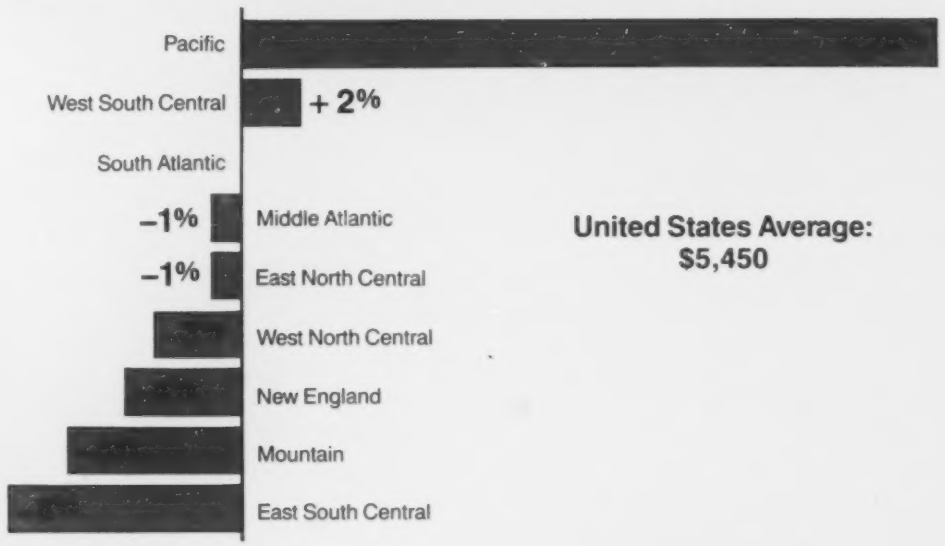
$7,460—37 percent above the national average. This high was followed by the charges in California, where the costs were 30 percent above the nation (Figure A). Illinois was the only other state in which the charges were at least 20 percent above the average in the country. The lowest total charges were recorded in North Carolina, with costs averaging $4,010—26 percent below the national total. It is interesting that because of the effect of charges in the Miami area, both the highest and lowest charges were reported for states within the South Atlantic division. Six other states, i.e., Indiana, Wisconsin, Iowa, Minnesota, Kentucky and Utah, reported average cholecystectomy costs 10 percent or more below the U.S. total.

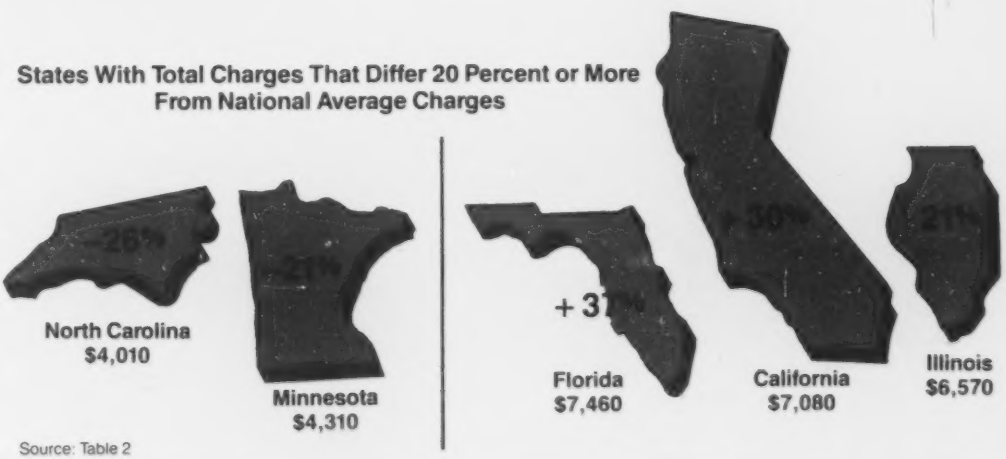
Table 1—Summary of Selected Characteristics of Cholecystectomy Patients With and Without Common Bile Duct Exploration

	Distribution of Cases		
	Cholecystectomy Without Common Bile Duct Exploration	Cholecystectomy With Common Bile Duct Exploration	All Cholecystectomies
New England	5%	4%	5%
Middle Atlantic	13	9	12
East North Central	23	27	24
West North Central	7	8	7
South Atlantic	16	15	16
East South Central	9	9	9
West South Central	14	17	14
Mountain	7	6	7
Pacific	6	5	6
Total Cases	(5,877)	(1,668)	(7,545)
Total Charges	$5,260	$6,080	$5,450
Highest Regional Total Charges	Pacific $6,570	Pacific $7,500	Pacific $6,740
Lowest Regional Total Charges	East South Central $4,860	East South Central $5,570	East South Central $5,020
Hospital Charges as Proportion of Total	74%	76%	75%
Ancillary Charges as Proportion of Total Hosp	63%	65%	63%
Length of Stay	8.8	9.8	9.0

Source: Claims data from Metropolitan Life Insurance Company, merged and edited by Corporate Health Strategies, Inc.; analysis by Health and Safety Division personnel.

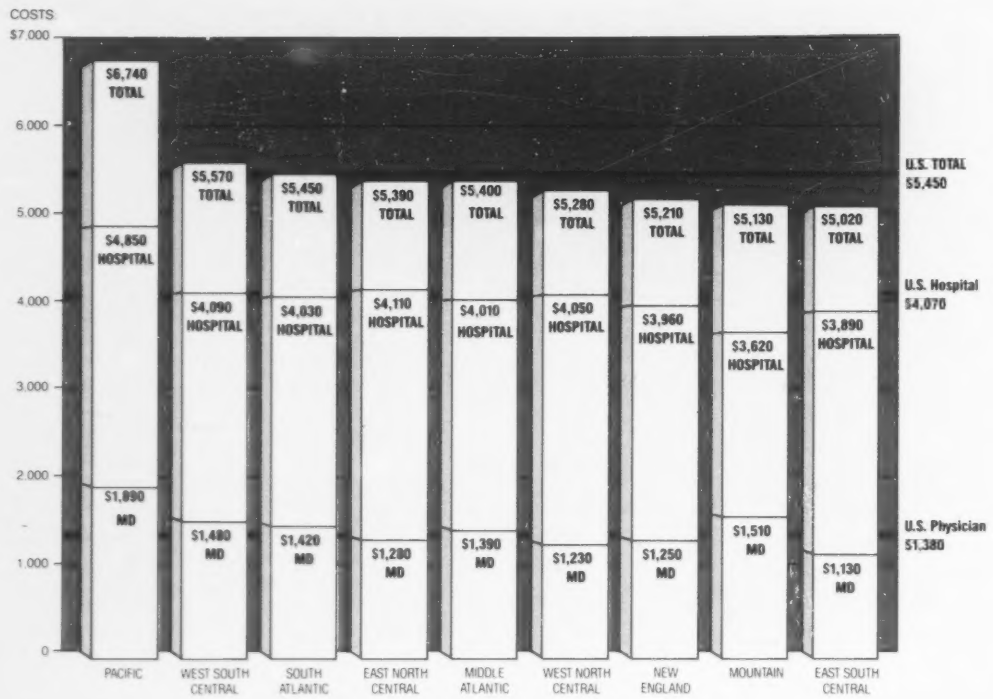
Figure A—Percent Difference in Average Total Costs of a Cholecystectomy by Geographic Division January 1, 1982–June 30, 1983





Source: Table 2

Figure B—Geographic Distribution of Total, Hospital and Physician Charges for a Cholecystectomy January 1, 1982–June 30, 1983



Source: Table 2.

Physician and Hospital Charges

On average, three-fourths of the cost of a cholecystectomy was attributed to hospital charges that include costs for room and board and ancillary services. By state, these proportions ranged from 79 percent in Michigan and Tennessee to 69 percent in Maryland and Utah. Figure B displays the total cholecystectomy costs for each region with the proportionate share that physician and hospital charges contribute to this total.

The total hospital bill differed by as much as 85 percent between the high reported for Florida and the low for North Carolina. The North Carolina hospital bill was low primarily because the room and board charges were so low, i.e., $960, or 36 percent below the national average. Other states in which the hospital charges were 10

Table 2—Regional Variation in Charges for Cholecystectomy* January 1, 1982–June 30, 1983

Geographic Area	Average Costs ($)					Average Length of Stay	Percentage	
	Total Hospital & Physician	Hospital Charge			Physician Charge		Hospital of Total	Ancillary of Hospital
		Total	Room & Board	Ancillary				
United States	5,450	4,070	1,490	2,580	1,380	9.02	75	63
New England	5,210	3,960	1,680	2,280	1,250	9.20	76	58
Connecticut	5,040	3,750	1,620	2,130	1,290	9.48	74	57
Massachusetts	5,600	4,370	1,790	2,580	1,230	9.18	78	59
Middle Atlantic	5,400	4,010	1,770	2,240	1,390	9.30	74	56
New Jersey	5,250	3,760	1,570	2,190	1,490	9.30	72	58
New York	5,830	4,140	2,040	2,100	1,690	9.78	71	51
Pennsylvania	5,180	4,020	1,680	2,340	1,160	9.01	78	58
East North Central	5,390	4,110	1,660	2,450	1,280	9.43	76	60
Illinois	6,570	5,040	2,000	3,040	1,530	9.84	77	60
Indiana	4,820	3,580	1,490	2,090	1,240	9.75	74	58
Michigan	5,000	3,960	1,580	2,380	1,040	8.10	79	60
Ohio	5,070	3,910	1,620	2,290	1,160	9.43	77	59
Wisconsin	4,880	3,630	1,370	2,260	1,250	8.85	74	62
West North Central	5,280	4,050	1,440	2,610	1,230	9.25	77	64
Iowa	4,660	3,560	1,440	2,120	1,100	9.42	76	60
Minnesota	4,310	3,140	1,140	2,000	1,170	7.59	73	64
Missouri	5,810	4,520	1,570	2,950	1,290	9.80	78	65
South Atlantic	5,450	4,030	1,280	2,750	1,420	8.76	74	68
Florida	7,460	5,450	1,460	3,990	2,010	9.42	73	73
Georgia	4,950	3,680	1,170	2,510	1,270	8.73	74	68
Maryland	4,940	3,410	1,440	1,970	1,530	9.05	69	58
North Carolina	4,010	2,950	960	1,990	1,060	7.35	74	67
Virginia	5,050	3,900	1,340	2,560	1,150	9.17	77	66
East South Central	5,020	3,890	1,220	2,670	1,130	9.58	77	69
Alabama	5,430	4,210	1,210	3,000	1,220	9.64	78	71
Kentucky	4,470	3,330	1,390	1,940	1,140	9.28	74	58
Tennessee	5,000	3,950	1,210	2,740	1,050	9.57	79	69
West South Central	5,570	4,090	1,260	2,830	1,480	9.13	73	69
Arkansas	5,440	4,180	1,300	2,880	1,260	9.90	77	69
Louisiana	5,390	4,050	1,100	2,950	1,340	8.42	75	73
Oklahoma	5,130	3,920	1,220	2,700	1,210	8.25	76	69
Texas	5,710	4,120	1,320	2,800	1,590	9.41	72	68
Mountain	5,130	3,620	1,300	2,320	1,510	7.63	71	64
Arizona	5,430	3,830	1,150	2,680	1,600	7.13	71	70
Utah	4,830	3,310	1,250	2,060	1,520	7.66	69	62
Pacific	6,740	4,850	1,780	3,070	1,890	7.62	72	63
California	7,080	5,090	1,830	3,260	1,990	7.68	72	64

*Surgeries performed on employees and dependents of group health customers of Metropolitan Life Insurance Company.
Source: Claims data from Metropolitan Life Insurance Company, merged and edited by Corporate Health Strategies, Inc.; analysis by Health and Safety Education Division personnel.

percent or more above the national average included Illinois, Missouri (principally the St. Louis area) and California. In contrast to these high hospital charges are those reported in Minnesota, Maryland, Kentucky and Utah, where the costs were at least 15 percent below average.

Physician charges varied extensively by state also. Florida and California again reported the highest state total charges, $2,010 and $1,990, which were 46 and 44 percent above the national average, respectively. Michigan, Tennessee and North Carolina registered average physician charges between 23 and 25 percent below that for the nation.

In three geographic divisions, New England, Middle Atlantic and East North Central, ancillary services comprised a smaller proportion of the hospital bill than the national average. Within these divisions, New York reported an average ancillary charge of $2,100, which was just over half of the total hospital bill and 19 percent below the national average. The lowest ancillary services charges were reported in Kentucky, with costs 25 percent lower than the nation.

Stones in the gallbladder will develop in approximately 20 percent of all Americans over the age of 40.

Stones in the gallbladder will develop in approximately 20 percent of all Americans over the age of 40. The majority of these persons will remain asymptomatic throughout life. Thus, the presence of gallstones is not the only prerequisite for a cholecystectomy. Conservative treatments are available and new, less complicated surgeries and some noninvasive treatments are being developed and tested, all toward a goal of reducing the medical/surgical costs associated with one of the nation's top 10 surgical procedures.

Why do costs of a cholecystectomy vary between geographic divisions and states? The reasons for and the meaning of such differences are difficult to assess. However, insofar as differences in incidence and prevalence rates of the disease do not appear to be significant, variation is more likely to be explained by prevailing medical practices, socioeconomic characteristics of the population, a difference in the proportion of elective versus emergency surgery, and the uncertainty of the natural history of gallstones. Whatever the explanation, it seems possible that some unnecessary surgery is being performed and health care consumers, providers and insurers should be alerted to the availability of alternative treatment regimens and encouraged to seek a second surgical opinion. □

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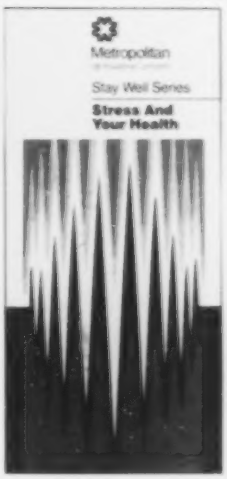
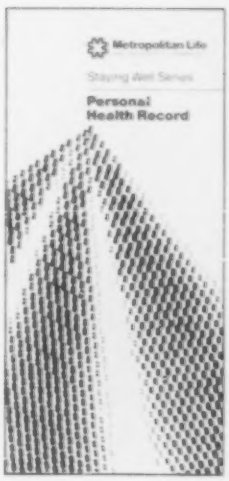
Health and Safety Education Materials Available From Metropolitan Life

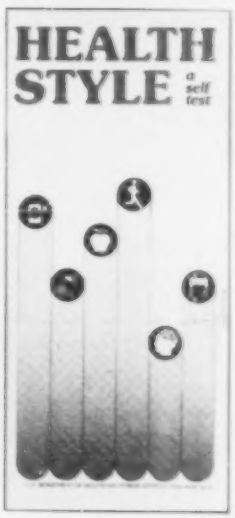
Health Tips for Teens. Discusses diet and exercise as well as stress, physical development and personal relationships.



Stress and Your Health. Describes different types of stress, effects on the body, warning signs, and offers tips on minimizing tension.

Personal Health Record. Folder for keeping a current record of your health and medical history. A must for every family member.





Health Style. A self test that can help you to identify aspects of your present lifestyle that are risky to your health.

For further information, write to: Health and Safety Education Division, Dept. SB, Metropolitan Life Insurance Company, One Madison Avenue, New York, N.Y. 10010.

Coming in Future Issues

- 1985 Life Expectancy of Men and Women
- Live Births by Age of Mother: Past and Present
- State Variations in Longevity
- Motor Vehicle Accidents: Variations by State and Sex

Erratum

[illegible] "Variations in Mortality from Cancer," **Statistical Bulletin**, Vol. 67, pp. 22-27, Jan.-Mar. 1986.

Table 2—Mortality From Malignant Neoplasms Among Women, page 24. The correct death rate for women aged 45-54 should read 171.0.

Historical Perspectives

40 YEARS AGO

IN THE 1946 STATISTICAL BULLETIN

Suicide rates increased after V-E Day, particularly among men. Part of this was attributed to the sharp decline in industrial activities and the subsequent reduction in employment. Some of the rise was probably caused by the difficulties of adjusting to civilian life. Economic and psychological factors have always had a profound effect on the suicide rate. Metropolitan statisticians pointed out that following World War I, the rate declined for two years, then increased sharply and continued upward until the early 1930s. (Currently the suicide rate for men is 19.2 per 100,000, for women it is 5.6—ed.) (Page 6, April) □

1946 marked the 25th anniversary of the discovery of insulin by Sir Frederick Banting and Dr. Charles H. Best in Toronto, Canada. Insulin has greatly enhanced the lives of diabetics and reduced mortality from diabetic comas, infection and gangrene. As a consequence, the number of diabetics in the population increased considerably, since treatment prolonged life without effecting a cure. Thanks to insulin and a better understanding of diabetes, the diabetic patient could anticipate a relatively healthy and active life. (Page 8, October) □

A brilliant victory had been scored over typhoid fever by medical science and public health experts. Between 1900 and 1944 the death rate for typhoid had declined by 99 percent from 30 per 100,000 to 0.4 per 100,000. Measures that contributed to this remarkable result were: installation of sewers, inoculations, and the filtration and chlorination of central water supplies. By 1944 typhoid fever had been completely eradicated in all areas of the country except the South and Southwest. (At present there are fewer than 5 deaths annually—ed.) (Page 9, June) □

The demographic picture of the U.S. population was changing. Persons 65 and over were becoming more numerous and certain health conditions peculiar to this group had to be addressed. A review of Metropolitan's companywide nursing service provided to policyholders from 1925 to 1945 verified this finding. In 1925, 50 percent of the cases were nursed for acute and communicable diseases common to early life and only 5 percent were for chronic diseases typical of old age. By 1945, a reversal occurred—the figures were 14 and 28 percent, respectively. Medical science and public health administrators had to adapt their services to combat cancer and cardiovascular-renal diseases, chief among the diseases causing invalidism and death among the aged. Their prevention and treatment would increase life expectancy as well as improve the productive capacity of the country. (Page 6, December) □

The intensified national campaign against venereal disease, particularly syphilis, had been very effective. This was verified by a study among Metropolitan Life policyholders for the period 1911 to 1945. Legislation requiring premarital blood tests in the majority of states and testing of expectant mothers had played a vital part in halting the transmission of the disease. Even wartime factors aided in the control, as a large number of cases were discovered through the Selective Service examination. Penicillin was an important factor in the attack on syphilis, but education played a vital role in eventually wiping it out. (Page 8, December) □

The United States was experiencing a period of vitality and population growth. There was a record high number of births and at the same time the total and infant mortality rates fell to new lows. The record number of babies resulted from the sharp increase in marriages that followed the demobilization of the armed forces after V-J Day in 1945. The national birth rate was about 24 per 1,000. (For several years, the U.S. birthrate has remained near 16 per 1,000 population—ed.) Infant death rates reached a record low of about 37 per 1,000 live births, while the death rate for the total population was about 10.2 per 1,000. As a result of high birth rates and low death rates the outlook for population growth was extremely bright. (Page 3, December) □

A study of intermarriage in New York State disclosed an increasing tendency for the foreign born to marry people born in the United States. With more economic and social contact, the traditional tendency to marry within one's own national group was disappearing. Of the countries studied for period 1928-41, women from England, Scotland and Wales showed the greatest tendency to marry men of other national groups. On the other hand, no progress in intermarriage was observed for brides and grooms born in Italy. The breaking down of racial barriers through intermarriage was viewed as a very positive step—especially in a world which had suffered so much from national rivalries and conflicts. (Page 4, May) □